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ART 34 AMDT

We claim:

1. A process for increasing the yield in preparing polyhydric  
5 alcohols, in particular trimethylolpropane, obtained by  
condensing formaldehyde with a higher aldehyde, by acid  
treatment of a mixture (high boiler fraction) comprising  
10 derivatives of these alcohols obtained by workup and having a  
higher boiling point than the particular alcohol and recovery  
of the polyhydric alcohol from the acid-treated high boiler  
fraction, wherein the water content of the high boiler  
fraction is from 20 to 90% by weight, based on the total  
amount of high boiler fraction and water.
- 15 2. A process as claimed in claim 1, wherein the polyhydric  
alcohol has been prepared by aldolizing formaldehyde with a  
higher aldehyde in the presence of catalytic amounts of a  
tertiary amine and hydrogenating the mono- or  
20 polymethylolalkanals obtained in this way, preferably of  
dimethylolbutanal to trimethylolpropane.
3. A process as claimed in claim 2, which comprises the  
following steps:
  - 25 a) distillative removal of the components having lower  
boiling points than the polyhydric alcohol from the crude  
product of the hydrogenation of the mono- or  
polymethylolalkanals
  - 30 b) separation of the resulting bottom product in a second  
distillation stage into a high boiler fraction and a  
fraction comprising the majority of the polyhydric  
alcohol
  - 35 c) acid treatment of the high boiler fraction
  - d) distillation of the fraction comprising the majority of  
the polyhydric alcohol to remove the more volatile  
40 compounds (medium boiler fraction) and recovery of pure  
polyhydric alcohol

wherein the acid-treated high boiler fraction is recycled  
into the hydrogenation of the mono- or polymethylolalkanals  
to the polyhydric alcohol.

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4. A process as claimed in claim 3, wherein some or all of the medium boiler fraction removed from the fraction comprising the majority of the polyhydric alcohol by distillation is mixed with the high boiler fraction before the acid treatment.
- 5.
5. A process as claimed in any of claims 1 to 4, wherein the acid concentration is from 0.1% by weight to 20% by weight, based on the total amount of high boiler fraction or the mixture of high boiler fraction and middle boiler fraction and water.
- 10.
6. A process as claimed in any of claims 1 to 5, wherein the acid is selected from C<sub>1</sub>- to C<sub>12</sub>-carboxylic acids, C<sub>2</sub>- to C<sub>12</sub>-dicarboxylic acids, sulfonic acids, mineral acids, carbon dioxide, sulfur dioxide and acidic ion exchangers.
- 15.
7. A process as claimed in any of claims 1 to 6, wherein formic acid is used.
- 20.
8. A process as claimed in any of claims 1 to 7, wherein the polyhydric alcohols are selected from the group of trimethylolethane, trimethylolpropane, trimethylolbutane, neopentyl glycol and pentaerythritol.
- 25.
9. A process as claimed in any of claims 1 to 8, wherein the polyhydric alcohol is trimethylolpropane.

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